BEAUFORT SEA ENVIRONMENTAL IMPACT STATEMENT

DEFICIENCY STATEMENT

(SOCIO-ECONOMIC)

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Northwest
Territories Minister of Energy and Resource Development

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FEV 9 1983

Dr. John Tener,
Chairman,
Beaufort Sea Environmental Assessment Panel,
700 - 789 West Pender Street,
VANCOUVER, B.C.
V6C IH2

Dear Dr. Tener:

The GNWT has reviewed the EIS submitted by Dome, Esso and Gulf to the Beaufort Sea Environmental Assessment Panel. The environmental and the socio-economic aspects have been reviewed separately, and are enclosed. These deficiencies have been identified in relation to the Guidelines issued in February 1982. This review has identified deficiencies which will, in our opinion, decrease the likelihood of clearly identifying and evaluating impacts at the hearings and reduce the Panel's effectiveness. I trust that the Panel will request the proponents to address these deficiencies before the hearings are convened.

Other gaps will be the subject of questions, presentations and final statements presented by GNWT officials to the Panel during the hearings. The GNWT is aware of the many factors that add to the urgency of this review and continues to support the Panel in its difficult task.

Yours sincerely,

Richard Nerysoo,
Minister.

Encl.

cc: Executive Committee

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1. **The significant positive and negative effects of Beaufort development on northern residents should be more completely identified.**

1.1 Industry's commitment to identifying and securing opportunities for local energy supply is not adequately discussed.

1.2 A realistic presentation of employment benefits for current northerners is essential for the assessment of the proposed development. The obvious mismatch of job opportunities to labour force skills makes it very difficult to assess the employment benefits. This is a critical issue for a development that clearly identifies jobs as a major benefit for current northerners. Some enhancement strategies - recruitment and counselling are discussed briefly. Industry's commitment to training programs is not adequately discussed.

> "At least during periods of high activity, anyone in the Mackenzie Valley who had some basic construction skills and who wanted a job, would likely be able to find one in pipeline construction, provided that union membership and seniority requirements would not pose obstacles". (II.14)

> "It is unlikely that many residents of small native communities would seek pipeline construction jobs. Such jobs would not be especially attractive to native people because they would be of short duration and would automatically or necessarily include a rotational work schedule similar to those which have applied to other projects and which would apply to the oil pipeline during the operations and maintenance phase". (II.22)

> "... at the same time, a realization that unless fundamental problems such as under-education and a lack of training are better addressed, particularly by government, development will quickly exhaust the available pool of qualified or semi-qualified manpower". (xiii)

> "It is probable that a pipeline construction project of the proposed magnitude would use major contractors whose employees are unionized". (II.26)

> "There will not, however, be a strong demand for basically unskilled and inexperienced people. The pattern is similar in the pipeline case, although somewhat more work may be available to unskilled people on pipeline construction crews". (7.3)

> "In simple terms, government, industry and local businesses are already employing most of the native people who are interested in, and able to, fill wage employment positions". (3.7)

> "... functional education level of the native people in the Beaufort Sea labour force is so low that only a small number of people are able to make use of the employment and training opportunities currently available." (3.7)

> "Hydrocarbon development would have a marked effect on regional employment and income levels. Both the indigenous labour force and the proportion of it employed by the industry will likely grow rapidly over the next 20 years. The wages paid to industry personnel would be high". (xix)

1.3 The socio-economic evaluation of development scenarios **tends** to be unbalanced and seemingly misleading. From the perspective of the GNWT, the most serious proposal - the small diameter pipeline - receives the briefest comments.

2. **Mitigative strategies for socio-economic impacts should be more clearly identified.**

2.1 As an initiator of major change in Western Arctic communities, and as those who are convinced that this change can be successfully accommodated by northerners, the proponents should be able to provide evidence of successful mitigative measures. Mitigative measures associated with Beaufort exploration activities and the Norman Wells Project should be evaluated. Other relevant development areas such as Alaska, Shetlands, Western USA or Northern Alberta should be reviewed. Various strategies are proposed for the management of the in-migrating labour force, including isolated work camps, and semi-permanent absorption into communities , but the rational for these options or their impacts are not adequately discussed. Impacts that have the greatest potential for successful mitigation need to be identified. Assumptions about the success of joint planning efforts and public policies need to be validated. Major problems such as housing, local inflation and alcohol abuse are not easily solved even with well-coordinated, well-funded efforts.

Even the proponents admit uncertainty:

> "There should, however, be no complacency about how easy some of the circumstances which now prevail in the Beaufort region will be to overcome. Conflicting views exist in the region around the questions of economic and political control; many people are under-educated in terms of modern needs; health problems persist; alcoholism and other social disorders are prevalent; housing, health, education, and social services require continued subsidization.

> The industry has not been overly affected by such matters to date because its operations have thus far been of a more limited scale and generally seasonal. However, if left unresolved, they could in future raise obstacles to the effective conduct of industrial activity and development". (9.4)
>
> "While industry and government will cooperate with Beaufort Sea communities to assist their adjustments to social change engendered by development, community members themselves will face complex and difficult decisions in planning for change and growth. Numerous studies done elsewhere have yet to clearly establish the significance of relationships between community facilities and services on the one hand and satisfaction and turnover on the other. In large part, residents' own judgements and commitments to planning for their communities will be required to make Beaufort Sea development successful in social terms". (8.17)
>
> "With community (Tuktoyaktuk) growth, some expansion of social services would be required, although the community should become more able to meet its needs through voluntary groups with the passage of time". (8.6)

2.2 The proponents' understanding of its role and obligations to mitigative measures needs to be clarified. The GNWT is concerned that the proponents' intentions about encouragement and consultation are not sufficient. As well, information about the compensation and liability policies of the proponents should be described. Some example of vague commitments are:

> "As is currently the practice of several oil and gas companies, some of the camps would be dry". (page 9.9)
>
> "There would seem to be two general options: fitting them (Industry personnel) into existing communities and building new towns... and the industry feels it must keep its options open on the matter". (7.10)

2.3 The proponents should demonstrate an adequate work plan for achieving their research objective as stated in section 3.6 volume 7: "the improvement of the northern socio-economic data base and the provision of a scientific basis for understanding northern economic and social processes."

3. **The long term social implications of Beaufort development have not been adequately considered.** The assessment focusses on the short term and on direct project effects. Issues such as the survival of traditional lifestyle and related renewable resource activities, the dependence of the regional economy on the oil and gas sector, and the likely "spin off" developments are too briefly considered.

4. **Some comments about the broader issues of northern participation in the review process are warranted. While key leadership may be informed, several factors may limit broader participation.**

   4.1 The EIS has not been produced in an "easy to read format" designed to encourage public review. The guidelines required the use of summaries and native languages.

   4.2 The EIS, especially the most relevant volumes, has been distributed in limited quantities to northern communities.

   4.3 It was expected that the proponents would visit affected communities. It is possible that the GNWT may not be informed of all EIS presentations in the NWT. We are aware that there have been presentations to representative groups in Inuvik, Pangirtung and Yellowknife.

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(ENVIRONMENTAL)

A. RECOMMENDATION

The Department of Renewable Resources recommends that the Panel require the proponents to produce supplementary information to address the following serious deficiencies:

1. Specify all mitigative measures to be used to reduce potential impacts, identify situations for which no mitigative measures are available and develop a program to monitor the effectiveness of the mitigative measures proposed.
2. Integrate the information provided in the EIS by providing an assessment of total impact of the development both prior to and after implementation of mitigative measures.
3. Critically address the capabilities of present contingency plans for accidents involving oil, gas, toxic chemicals and fire, and outline the future contingency plans required to accommodate production and transportation of oil and gas.
4. Describe and identify relative impacts of alternatives to location of facilities and to routing of oil and gas transportation modes.
5. Describe deactivation of proposed oil and gas fields.

These are deficiencies that the proponents could have and should have filled. We provide detailed comments on these and other deficiencies in Section C. All of these deficiencies were areas to which the proponents' attention was directed in the Guidelines. We have not included matters which we consider to be unanswerable or outside the proponents' area of responsibility.

B. DEFICIENCIES OF THE ENVIRONMENTAL IMPACT STATEMENT

1. Methods

The environmental impact assessment provided by the proponents (Vol. 4) suffers several methodological deficiencies.

First, no definition of scientific objectives was provided.

Second, the proponents failed to list the assumptions used in their assessment. Only one assumption was explicit, i.e. that mitigative measures will be employed where appropriate and will be effective

(Vol. 4, I.3). However, others were not mentioned.

Third, the proponents used the matrix or species - list method of predicting effects. The method has certain characteristics which must be kept in mind while the assessment is done. In most cases, the prediction of effects is based on qualitative data which must be used in circumstantial fashion to predict change. While a matrix format can be useful for doing environmental impact analysis, it has limitations which relate particularly to the assessment prepared by the proponents. When a large number of interactions are involved or alternatives are considered, the method becomes unwieldy or overwhelming. Interaction among impacts are ignored, estimates are subjective (Rosenberg et al. 1981)[1]. The proponents should have added another method of assessment to offset the problems associated with a matrix method.

Fourth, the proponents failed to consider secondary impacts.

2. Definitions of Impact

The Guidelines (p.14) outlined requirements for a rating system, but left the distinction among levels of impact to the proponents. The proponents (Vol. 4, p.I.3) provided definitions to distinguish the criteria they used to assign impact ratings. Any attempt to increase the objectivity of an impact assessment is laudable. However, the proponents should have tempered the definitions of impacts with a clear statement that imprecision and subjectivity are conditions of both existing data and current models of impact assessment methodology.

To reach an objective rating of impact of an activity on a species using definitions provided by the proponents, one would have to know the size of the given population, its distribution, recruitment rates,

[1] Rosenberg, D.M., V.H. Resh, S.S. Balling, M.A. Barnby, J.N. Collins, D.V. Turbin, T.S. Flynn, D.S. Hart, G.A. Lamberti, E.P. McElravy, J.R. Wood, T.E. Blank, D.M. Schultz, D.L. Marrin and D.G. Prince. 1981. Recent trends in environmental impact assessment. Canadian Journal of Fisheries and Aquatic Sciences. 38:5 (591-624)

generation time, normal life span, and likely rates of immigration as well as quantitative aspects of all interactions between the development and members of the population; a clearly impossible demand for any species in the project area.

It may also be argued that the definitions lull us into believing that they, in some way, reflect a capability to measure impacts of the magnitude described as "negligible", for instance. The technical capability to recognize and classify most impacts - with the possible exception of those designated as major, does not exist for any species.

Apart from the above deficiencies, application of the definitions required further explanation. How does one assess the "integrity" of a population? The term "regional population" posed difficulties when it referred to species which migrate across the borders of the proponents' regions of which have distributions which are not contiguous with the proponents' boundaries.

3. Impact Assessment

The Guidelines required the proponents to predict trends in populations of affected species without the development, and to discuss the role of each species in the "stability, productivity, variability and resiliency of arctic communities" (p. 37). The proponents quite properly stated (Vol. 7, p.I.I) that research into such matters is one of the responsibilities of governments. Nevertheless, they could have met some of the Panel's requirements by interpreting data available to them and studying information from other areas where ecosystem type studies were conducted.

The proponents' impact assessment seemed to assume that:

a) there are now no significant human pressures on populations of wildlife in the development area; and
b) impact assessment ratings do not change with natural variations in populations.

The proponents should have assessed the effects of industrial activities with consideration of and in addition to current pressures on populations affected by the development. For example, polar bears are harvested, under a quota system, at high levels. Population size and demographic characteristics may currently be influenced by the harvest. Reduced productivity of bears as an impact of development or a relatively small number of bears killed as nuisances could cause the number of bears in the Beaufort Region to decline. That, in our view, is not a "negligible" impact. Other species in the development area may also be reacting to pressures apart from the development.

The proponents should have considered how their activities might affect species in which the population size varies naturally. For example, the proponents did comment that ringed seal populations may be strongly influenced by ice conditions. The proponents did not indicate whether impacts of their operations are expected to change in severity depending on whether ringed seal population levels are low or high.

The Guidelines (p. 18) required the proponent to analyze effects on plant and animal communities and their key component "particularly for each major development component ... the synergistic and accumulative effects with other development components should also be identified and analyzed. Emphasis should be placed on those effects, both beneficial and adverse that are deemed to be significant". The EIS failed to meet the requirement in two ways: by not discussing total impact and by not discussing cumulative impact.

The proponents should have discussed the total impact of all the proponents' activities for the range of time periods and development options considered. Had the proponents met the guidelines, we might have some idea of whether a multitude of "negligible" impacts ever become "minor" or "minor" impacts become "moderate". Providing an assessment of total impact would have helped to integrate the contents of the EIS and meet the fragmentation problem discussed later. Without a discussion of total impact, it becomes difficult to evaluate the total environmental impact of the development proposals and this is a major task before the Panel.

The EIS failed to discuss synergistic or cumulative impacts. In our view, there is a distinction between the total impact of the proponents' developments and the cumulative impact which must include secondary effects, and developments not under the control of the proponents. As far as we are aware, the treatment of cumulative impacts has never been satisfactorily dealt with even on a theoretical level. The proponents should not be faulted for not attempting such an assessment, but we wish they had.

4. Organization

The EIS was so organized that a fragmented picture of the development and its impacts was the inevitable result. No attempt was made to integrate all the material presented. We are concerned that this geographic-project area fragmentation may have resulted in impacts being subdivided into such small components that they became trivialized, or may have caused areas of conflict between development and renewable resources to be missed. This is partly a result of the method chosen as discussed earlier.

The proponents could have integrated some of their material by providing an atlas as part of their EIS. It should have included, among other things, projected development, required ancillary facilities, ranges of wildlife species, and hunting and trapping areas.

5. Alternatives and Abandonment

The Guidelines specifically required that alternative modes of production and transportation and abandonment of development facilities be addressed within the EIS (p. 6, 11). The proponents have been deficient in their response to each of those requests. The strategies used to manage renewable resources and to minimize impact are dependent upon more information on these two aspects of development.

Not all areas in the Arctic are equally sensitive to disturbance by development activities. If alternatives to routing of transportation modes or facility placement had been described then evaluation of those choices with respect to environmental sensitivity and ability to recover could have been attempted. For example, the environmental pros and cons of pipelines versus tankers were not discussed, nor were alternatives to North Point or the Mackenzie Valley pipeline described and assessed. A pipeline terminal near Tuktoyaktuk would avoid a pipeline crossing of the east channel of the Mackenzie River and minimize industrial contact with grizzly bears on Richards Island.

In Volume 4 (p. 52) there is a reference to a small diameter buried pipeline to connect Beaufort Sea discoveries to the Norman Wells pipeline. However, no other information about this pipeline exists in the EIS. A support document outlining the proposal and its predicted impacts should have been provided, if the concept was developed too late to be incorporated into the EIS. No comparison between the total environmental impact of a small, buried pipeline and a large elevated pipeline was attempted despite the fact that the Guidelines specifically required discussion of alternatives which may lead to significant differences in impact. Additionally, assessment of impacts of other small scale development options should have been provided.

No plans were provided for the deactivation of the proposed oil and gas fields. It should have been stated what parts of the facilities will be dismantled, what plans there are for rehabilitation of habitat and how the withdrawal will be policed.

6. Mitigation, Enhancement and Compensation

The Guidelines state (p. 14) that "the enhancement of desirable effects and the avoidance and mitigation of adverse effects should be considered. Compensation of adverse effects should also be considered". The EIS discussed "residual impacts" after effective implementation of certain unstated mitigation measures. The proponents should have provided an assessment of the effects of their proposed developments if built under standard operating or construction procedures and should have reported on the improvements anticipated when mitigation measures are applied.

The proponents failed to specify in the EIS what mitigation measures they intend to use. Such measures should ahve been specified and the situation in which they would be used, explained. Previous use and anticipated or observed effectiveness of particular measures should have been described. Alternative approaches to specific mitigation problems and impacts which cannot be mitigated should have been discussed.

The proponents mention (Vol. 5, 8.29, 9.12) the possibility of developing alternative habitat for species dispalced by the development but do not discuss the advantages, disadvantages or possible difficulties of attempting to do so.

The proponents ignored the area of compensation for damage to renewable resources or renewable resource harvesting.

7. Contingency Plans

The proponents have presented a good review of the oil spill counter-measures available today and have been among the leaders in developing and testing techniques. However, the Guidelines (p.22) required the proponents to "describe and estimate the capabilities and limitations of any counter-measures that may be taken to control pollutants including oil on the surface (with or without the presence of ice), beneath the surface, at the sea-land interface and on land." The proponents have not responded to this request. Although contingency plans by Dome, Gulf, Esso and government agencies exist for Beaufort Sea exploration activities, the proponents have not presented critical analyses of the capabilities of the present countermeasures nor have they suggested the changes which must be made to existing contingency plans to accommodate the proposed increases in activity. Volumes 6 and 7 outlined a number of areas where research is still ongoing. Research needs include the chemical nature of Beaufort oil which dictates, in part, the choice of clean-up measures (Vol. 6, p. 3.7); use of chemical dispersants and their toxicity to Arctic marine organisms (Vol. 6, p. 5.18); spill response equipment (Vol. 7, p. 3.30); and oil spill tracking especially under ice (Vol. 7, p.3.32). The proponents should have explained how knowledge gaps in those areas influence the effectiveness of present contingency plans. The proponents' statement that they "will write contingency plans covering all aspects of the proposed developments" (Vol. 6, p. 5.23) was inadequate. It is necessary to know the limitations of all contingency plans now to evaluate their overall effectiveness and to comment on the impacts that accidents from development activities pose to the environment.

Oil spill cleanup measures on land were only superficially addressed in the EIS (Vol. 5, Ch. 7). More detail is required on how oil is to be recovered from the surface, effective disposal of the oil and reclamation of the site. The cleanup measures suggested for water courses lack detail.

The Guidelines also required contingency plans for other types of accidents (fire - p. 18, toxic substances - p.28). Volume 4 stated that contingency plans for methanol spills (p. 5.12), toxic liquids (p. 5.13) and fires (p. 5.36) would be developed during the final design stage. The proponents should have provided these contingency plans or at least the rationale for their exemption from the EIS.

8. Chronic Pollution

Regarding chronic pollution, the Guidelines (p. 21) stated that "chronic pollution effects on the food chain and dependent higher animals resulting from discharges to the environment of substances such as ..." should be assessed. The proponents gave inadequate consideration to the repeated release of minor volumes of oil to the environment (Vol. 6, 8.1). That such chronic contamination is an inevitable result of production and transportation of fossil fuels was not acknowledged in the EIS. The proponents also failed to identify the numerous sources of chronic contamination. While they acknowledged that such chronic contamination is largely a result of human error, little was offered in the way of personnel education programs or surveillance procedures designed to reduce spillage frequency. Impacts of chronic contamination were not discussed.

9. Hazardous Materials

The Guidelines (p. 10) stated that "storage, treatment and disposal of waste or toxic substances used or generated during all phases of operation and maintenance" must be discussed. The proponents failed to identify toxic substances used during exploration, production and transportation. The purposes of those substances should have been explained and the most likely manner in which they could be released to the environment described. Operating procedures designed to minimize the probability of accidental release to the environment should have been outlined. Storage and disposal procedures should have been specified in the EIS and not merely deferred to a "hazardous wastes contractor" (Vol. 6, p. 9.2).

10. Sensitive Areas

The Guidelines do not require the proponents to specifically delineate "sensitive" or critical habitats. The proponents briefly described some important habitat areas in species discussions (Vol. 4) and locations identified for National Parks and the International Biological Program Sites. They mentioned (Vol. 5, p. 8.29) the critical wildlife habitat mapping program being undertaken by the NWT Wildlife Service and its anticipated utility to industry. However, the proponents failed to compile and integrate the information on sensitive wildlife habitat or special sites provided by them in their EIS. Volumes 2 and 4 provided no evidence that the proponents have attempted to avoid sensitive or critical areas in siting their operations or that they have successfully designed special mitigative measures for sensitive locations.

II. Research and Monitoring

The Guidelines required that "the extent and significance of knowledge gaps should be identified, particularly where some deficiencies affect predictions of impact. Needs for further research or data collection to improve prediction capabilities and understanding should be identified" (p. 14,15). Within the field of renewable resources it is important to distinguish research, which is designed to address knowledge gaps, from monitoring, which assesses the performance of a project or the effectiveness of mitigative measures. The proponents confused the two issues and were deficient in responding to the Guidelines.

Numerous knowledge gaps which affect prediction of impact were identified within the support documents, the EIS and the review of the EIS by the Department of Renewable Resources. Since the EIS was based on available literature, it presented an excellent opportunity to define deficiencies in the existing data base and to describe the research required. The proponents could also have indicated which of the material needed would be supplied by their programs, where joint programs would be appropriate and where other agencies should be responsible.

Volume 7, Table 4.1 addressed only a fraction of the recognized knowledge gaps. Some other data gaps which prevent an assessment of impact follow:

a. No current information is available on the population status, productivity or critical habitat of woodland caribou or any of the important furbearers - arctic fox, muskrat, beaver, marten. How then, is it possible to assign impact ratings to these species in the EIS?

b. "More knowledge is needed concerning how animals are disturbed or displaced by development related activities or what happens to them if they move to alternative habitat. Industry will continue to support disturbance studies, particularly as they relate to hydrocarbon activities, so that the nature of possible effects is better understood" (Vol. 5, p. 9.12). The proponents failed to indicate how such research could improve the level of confidence they place in their impact prediction.

c. No soil map was presented in the EIS. "Large scale soil surveys of Mackenzie Valley South have not been completed" (Vol. 3, p. 1.39). Such information is critical for purposes of identifying sensitive habitat types. For example, the distribution of eolian and glaciolacustrine deposits would indicate potential bear, wolf and fox denning areas because sand and silt ridges are generally unfrozen.

d. Support document No. 24 (ESL 1981) listed outstanding data gaps which should be filled before a precise prediction of the possible effects of an oil spill on the marine environment can be produced (p. 45). The Guidelines (p. 28, 29) directed the proponents to develop a monitoring program which would:

a. identify types of information that will provide a suitable baseline for subsequent monitoring;

b. monitor environmental consequences of Beaufort Sea oil and gas production and transportation; and

c. monitor effectiveness of enhancement, mitigation and compensation measures.

Monitoring the effects of a development, demands that the conditions existing prior to the development be understood. The EIS neither reflects the current lack of information on present conditions, nor has it described a comprehensive program to monitor possible environmental consequences. In a development proposal in which many of the activities represent untried technology, this is a serious deficiency.

It has been stated previously that virtually no mitigative measures were described within the EIS. Within the Arctic, where there has been little development, few mitigative measures have been tested. This dramatically increases the need to monitor the effectiveness of mitigative measures. The proponents stated (Vol. 7, p. I.I) that industry is responsible for "monitoring the effectiveness of mitigative measures against environmental criterial and standards (and) researching and developing practical mitigative measures". However, they provided the Panel with no explanation of how their responsibilities would be met.

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